

REMARKS

Claims 1, 3, 4 and 6-10 are pending in the present application and are rejected. Claim 10 is herein amended.

Applicants' Response to Claim Rejections under 35 U.S.C. §112

Claim 10 was rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

It is the position of the Office Action that claim 10 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 10 recites that the “biodegradation rate is controlled by altering proportions of said aliphatic polyester (A), said carbodiimide compound (B) and said at least one compound (C) selected from the group consisting of benzotriazole-, triazine- and hydroxylamine-based compounds.” However, it is the position of the Office Action that the specification does not teach the step of altering proportions of each of components (A), (B) and (C) as claimed.

In response, Applicants herein amend claim 10 in order to delete the recitation of altering proportions of part (A). Favorable reconsideration is respectfully requested.

Applicants' Response to Double Patenting Rejections

Claims 1, 3, 4 and 6-10 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of co-pending

Amendment
Serial No. 10/698,934
Attorney Docket No. 032044

Application No. 11/051,462 in view of Murschall et al. '758 (U.S. Patent No. 6,855,758) or Murschall et al. '843 (U.S. Patent Application Publication No. 2003/0091843).

Claims 1, 3, 4 and 6-10 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of co-pending Application No. 11/172,904 in view of Murschall et al. '758 (U.S. Patent No. 6,855,758) or Murschall et al. '843 (U.S. Patent Application Publication No. 2003/0091843).

It is the position of the Office Action that each of the '462 application and the '904 application discloses the manufacture of a biodegradable plastic using a carbodiimide and optionally including an ultraviolet absorber. The Office Action relies on Murschall '758 or Murschall '843 to disclose the use of a benzotriazole as an ultraviolet absorber.

Applicants respectfully submit that for at least the reasons discussed in the section below, the claimed invention shows unexpected synergistic results. Thus, Applicants respectfully submit that it would not have been obvious to combine either of the '462 application or the '904 application with Murschall '758 or '843. Favorable reconsideration is respectfully requested.

Applicants' Response to Claim Rejections under 35 U.S.C. §103

Claims 1, 3, 4 and 6-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Imamura et al. (U.S. Patent No. 5,616,657) in view of Murschall '758 or Murschall '843.

Claims 1, 3, 4 and 6-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ariga et al. (U.S. Patent No. 6,803,443) in view of Murschall '758 or Murschall '843.

It is the position of the Office Action that Imamura and Ariga disclose the production of a polyester from aliphatic components. The Office Action further relies on Imamura and Ariga to teach the inclusion of ultraviolet inhibitors, including benzotriazoles and a stabilizer including carbodiimides. However, both Imamura and Ariga disclose the use of benzotriazole or carbodiimides. The Office Action relies on Murschall '758 and Murschall '843 to teach the conjunctive use of a benzotriazole as an ultraviolet light stabilizer and a carbodiimide. The Office Action states that "[t]he employment of the two recited additives is deemed to be conventional to those having ordinary skill in the art, and subsequent use in the composition of Imamura et al [or Ariga et al], on the suggestion thereof would have been obvious to an artisan of ordinary skill."

Both Murschall '758 and Murschall '843 are directed a hydrolysis-resistant, transparent, biaxially oriented films made from a crystallizable thermoplastic, and process for production thereof. However, both Murschall '758 and Murschall '843 only disclose the combination of benzotriazoles and carbodiimides with an *aromatic* polyester. For instance, Murschall '758 discloses at column 4, lines 57-67:

The film of the invention comprises, as main constituent, a crystallizable thermoplastic, in particular a crystallizable polyester or copolyester. Examples of suitable crystallizable or semicrystalline (co)polyesters are polyethylene terephthalate (PET), polyethylene naphthalate (PEN), polybutylene terephthalate (PBT), bibenzoyl-modified polyethylene terephthalate (PETBB), bibenzoyl-modified polybutylene terephthalate (PBTBB) and bibenzoyl-modified polyethylene naphthalate (PENBB), preference being given to polyethylene terephthalate (PET) and bibenzoyl-modified polyethylene terephthalate (PETBB).

Murschall '843 contains a similar disclosure at paragraph [0027]. Thus, Murschall '758 and Murschall '843 only disclose the combination of benzotriazoles and carbodiimides with *aromatic* polyesters, not *aliphatic* polyesters.

Therefore, Applicants respectfully submit that it would not have been obvious to combine the teachings of Murschall '758 or Murschall '843 with the teachings of Imamura or Ariga. Both Imamura and Ariga disclose use of benzotriazoles or carbodiimides, but there is no suggestion or motivation to modify these primary references by utilizing both compounds. The experimental results in the specification illustrate the unexpected results from the conjunctive use of an aliphatic polyester, benzotriazoles and carbodiimides.

One having ordinary skill in the art would not have been motivated to combine the teachings of references which relate to *aromatic* polyesters (Murschall '758 and '843) with the teachings of references which teach *aliphatic* polyesters (Imamura and Ariga). In order to further illustrate this point, Applicants herewith submit a Declaration under 37 CFR §1.132, which includes experimental results similar to that of the Declaration filed on October 5, 2006. Applicants respectfully submit that the attached experimental data demonstrates unexpected synergistic effects when utilizing *aliphatic* polyesters, but a lack of synergistic effects when utilizing *aromatic* polyesters.

The law regarding unexpected results is summarized in MPEP §§716.02(a)-(e). "A greater than expected result is an evidentiary factor pertinent to the legal conclusion of obviousness...of the claims at issue." *In re Corkill*, 711 F.2d 1496, 226 USPQ 1005 (Fed. Cir. 1985). According to MPEP §716.02(a), evidence of a greater than expected result may also be

shown by demonstrating an effect which is greater than the sum of each of the effects taken separately (i.e., demonstrating “synergism”). *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). Such “synergism” need not be recited in the claims. Additionally, it is noted that “[an] inventor need not understand precisely why his invention works in order to achieve an actual reduction to practice.” *Parker v. Frilette*, 462 F.2d 544, 547, 174 USPQ 321, 324 (CCPA 1972).

Specifically, this Declaration shows that a plastic consisting of the combination of the (A) *aromatic* polyesters of the Murschall references, (B) carbodiimide, and (C) benzotriazole (Additional Experiment 3) does not provide a greater hydroresistance as compared a plastic consisting of the (A) *aromatic* polyesters and (B) carbodiimide only (Additional Experiment 4). Compare Additional Example 3 with Additional Example 4. This experimental data shows that the use of a (C) benzotriazole-based compound and (B) carbodiimide together do not necessarily produce the synergistic effects of reducing hydrolysis. See Table B.

On the other hand, the Declaration also shows that a compound having (A) an *aliphatic* polyester, (B) a carbodiimide compound, and (C) a benzotriazole-based compound has a far greater hydrolysis resistance than a compound having only an (A) *aliphatic* polyester and a (B) carbodiimide. For example, compare any of Example 4, Additional Experiment 1 and Additional Experiment 2 with Comparative Example 4. In other words, the unexpected results of combining a carbodiimide and a benzotriazole are not seen in the presence of an aromatic polyester, but are seen in the presence of an aliphatic polyester. See Table A.

Ariga and Imamura each disclose a compound comprising an aliphatic polyester and one of a benzotriazole-based compound or carbodiimide. Applicants respectfully submit that it would not have been obvious to modify Imamura or Ariga by utilizing both a benzotriazole-based compound and a carbodiimide alongside the aliphatic polyester, instead of using a benzotriazole-based compound or carbodiimide alongside the aliphatic polyester.

One having ordinary skill in the art would not have recognized a synergistic effect imparting the unexpected results of hydrolysis resistance as discussed in the specification, since the experiments in the Declaration show that use of an aromatic polyester with both a benzotriazole-based compound and a carbodiimide (as in Murschall '758 and '843) does not provide a synergistic effect with respect to hydrolysis resistance.

Accordingly, the combination of components as suggested by the Office Action would not have been obvious to one having ordinary skill in the art. Therefore, Applicants respectfully submit that there is no suggestion or motivation to combine either of Imamura and Ariga with Murschall '758 or '843. Favorable reconsideration is respectfully requested.

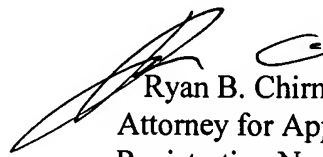
For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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Enclosure: Declaration under 37 CFR § 1.132